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### GEO 101N.01: Introduction to Physical Geology

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# Introduction to Physical Geology: Geo 101, Autumn 2021

## Contact information

**Professor:** Dr. Natalie Bursztyn

**Office:** SC367

**Class:** Stone 304 MWF 1:00-1:50 pm

**Email:** natalie.bursztyn@umontana.edu

**Office hours:** MWF 10:30-11:30 am. Please do not hesitate to contact me to set up a meeting at another time

## Course description:

This course is an introduction to geology, the study of how Earth works. Humans around the world are impacted every day by interaction with our planet, including geologic hazards and access to natural resources. This course will help you to develop your understanding of the physical processes that have gone into making the Earth what it is today.

This is a “flipped” class. What does that mean? It means that we will do a lot of in-class exercises in groups and I will do as little traditional lecturing as possible. It also means that you need to come to class prepared in order to be an active student contributing by participation in these activities. The more you participate, the more you will learn, and the better you will do in the class. In-class activities are worth 20% just for doing them and their content will relate directly to the exams!

## Learning Outcomes:

After completing this course, you will be able to:

1. Describe, analyze, and assess the geologic features, events, and processes that impact your life
2. Use evidence (e.g., from graphs, rocks, maps, etc.) to support an interpretation or explain a concept
3. Explain the general principles associated with the discipline of geosciences including:
  - a. Geoscientists use repeatable observations and testable ideas to explain and understand our planet
  - b. Earth is 4.6 billion years old and has a complex and varied history
  - c. Earth is a complex system of interacting rock, water, air, and life
  - d. Earth is continuously changing, primarily due to active plate tectonics and erosion
  - e. Humans depend on Earth for resources that are formed by geologic processes
  - f. Natural hazards pose risks to humans and must be understood in order to minimize and mitigate risks
  - g. Geologic processes have impacted the development of human civilization and the actions of humans can significantly impact the Earth

## Required textbooks:

Both the following textbooks are free open access resources. All readings will be assigned from the first text (Johnson et al.) and the second text (Earle) is provided for you to explore topics more deeply and seek out additional information as you desire.

- [Introduction to Geology](#)
- [Physical Geology](#)
- All additional supplementary materials will be provided via Moodle

## Course Calendar:

Wk	Topic	Reading		Notes
1	Introduction to Earth systems	<a href="#">Chapter 1</a>		
2	Minerals	<a href="#">Chapter 3</a>		Sept. 6 Labor Day
3	Igneous and metamorphic rocks	<a href="#">Chapters 4</a> (thru 4.4) <a href="#">and 6</a>		
4	Sedimentary rocks	<a href="#">Chapter 5.3 thru 5.5</a>		
5	Soil; review	<a href="#">Chapters 1-6</a>	<b>Exam 1</b>	
6	Plate tectonics	<a href="#">Chapter 2</a> Review		
7	Plate tectonics, earthquakes	<a href="#">Chapter 9.4 through 9.8</a>		Prof @ GSA Oct. 10-13
8	Earthquakes, volcanoes	<a href="#">Chapter 4</a>		
9	Volcanoes	<a href="#">Chapter 4</a>		Prof @ TIDeS Oct. 24-27
10	Review; erosion	<a href="#">Chapter 10</a>	<b>Exam 2</b>	
11	Geologic time, fresh water	<a href="#">Chapter 7</a> , <a href="#">Chapter 11</a>		
12	Fresh water, ocean circulation	<a href="#">Chapter 12.3</a>		
13	Atmosphere	<a href="#">Chapter 15.1</a>		Nov. 24-26 Thanksgiving
14	Climate system	<a href="#">Chapter 15</a>		
15	Interconnectedness of Earth systems	Review all	<b>Final project</b>	
16	<b>Final Exam</b>			

## Required assignments and exams:

60% Exams (3 exams, 20% each)

20% Final project

20% In-class assignments

### Exams

There will be three (3) exams throughout the semester. Exams are NOT cumulative. Exams 1 and 2 will be 2-stage exams. The first stage will be a group "essay" (worth 20% of the total exam score) to be completed during class time on the day of the exam, the second stage will be multiple choice (worth 80% of the total exam score, to be completed individually via Moodle *after* class time by the end of the day on the day of the exam). Questions will be derived from both your readings and your in-class assignments.

### Final project expectations

This is an ongoing project that you should start after the second exam. The project is designed to allow you to explore a topic you are interested in and applying geologic concepts to the human dimension (or the human dimension to geologic concepts...)

## Course guidelines and policies:

### Student Conduct

Academic integrity: All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the [Student Conduct Code](#).

Communication: Please note that I will only use your official UM email address for communication. This is required by UM to comply with FERPA (the Federal Educational Rights and Privacy Act). It is your responsibility to make sure you read messages sent to your UM email address in a timely manner.

Studying & time expectations: A standard benchmark for a college course is 2-3 hours of work outside of class for each hour in class. This means that for our 3-credit class, you should plan to spend 6-9 hours per week outside of class on reading the textbook chapter, doing assignments and other forms of study.

### **Attendance**

Attendance as well as completion of in-class assignments is critical to your success in this class. I cannot stress enough that you must also turn in your in-class assignments, otherwise I cannot give you credit for them. Good for you for reading this far and this closely in the syllabus. As a reward, you should e-mail me your favorite snack and earn early extra credit points. The university attendance policy can be found [here](#).

### **Disability modifications**

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the [Office for Disability Equity \(ODE\)](#). If you anticipate or experience barriers based on disability, please contact the ODE at 406.243.2243, [ode@umontana.edu](mailto:ode@umontana.edu) for more information. Retroactive accommodation requests will not be honored, so please, do not delay. As your instructor, I will work with you and the ODE to implement an effective accommodation, and you are welcome to contact me privately if you wish.

### **Grading policy**

This course must be taken for a traditional letter grade to meet the Natural Sciences General Education requirement. A minimum final grade of C- is required to meet the Gen Ed requirement. The following grading scale may be adjusted at my discretion.

A	A 94-100%	Outstanding	Your work was <b>exceptional</b> : you have mastered the material. You consistently demonstrated an excellent understanding of all aspects of the course. You went above and beyond the requested outputs and offered unique insights and ideas. Your work exceeds my expectations for what I believe a student should demonstrate.
	A- 90-93%		
B	B+ 87-89%	Good to very good	You have <b>grasped the material</b> . Your work was complete, clear and understandable, and you consistently showed a strong understanding of the material. Your work meets my expectations for what I want students to take away from this course.
	B 83-86%		
	B- 80-82%		
C	C+ 77-79%	Satisfactory	You <b>completed the material</b> . You were able to grasp the majority of the concepts in the course; and demonstrated some ability to apply those concepts.
	C 73-76%		
	C- 70-72%		
D	D+ 67-69%	Barely satisfactory	Your work in the class was <b>barely acceptable</b> . Either you failed to complete some assignments, or your grasp of the course material was weak and incomplete.
	D 63-66%		
	D- 60-62%		
F	59% or less	Unsatisfactory	Your work was <b>unacceptable</b> . You did not learn the material.